



Memorandum

To: Pamela Tames, EPA Region 2

From: Edward Leonard, CHMM
Joseph Button, PG, PMP, CDM Smith

Date: 12/15/2020

Subject: Summary of Globe Metals Property
Soil Stockpile Sampling and Soil Erosion and Sediment Controls
November 2-4, 2020
Pierson's Creek Superfund Site, OU1

Introduction

This memorandum briefly summarizes the field events performed by CDM Federal Programs Corporation (CDM Smith) on behalf of the United States Environmental Protection Agency (EPA) between November 2 and 4, 2020 at the Globe Metals property of Pierson's Creek Superfund Site, Operable Unit 1, in Newark, New Jersey.

In September 2019, the former prospective buyers of the Globe Metals property constructed drainage and site improvements on the property which included excavating and culverting the southern portion of the Upper Creek tributary on the property. As a result of this work, soil/sediment, vegetative matter, and other debris were stockpiled for storage in several piles on the northern and eastern side of the property. A total of eight stockpiles were identified on the property during the field activities; three of which contained soils, sediments and other debris that were removed from the tributary and surrounding soils. Sample results from previous investigations of the tributary and adjacent soils indicated that these stockpiles likely contained materials that were highly contaminated. The locations of the three stockpiles (Stockpiles A, B, and C) are shown on **(Figure 1)**. Based on this information, stockpile sampling and characterization of these three stockpiles was requested by EPA.

CDM Smith collected samples from the stockpiles for waste characterization. These samples were analyzed by Katahdin Analytical Services for polychlorinated biphenyls (PCBs), toxicity via the Toxicity Characteristic Leaching Procedure (TCLP), reactivity, ignitability, and corrosivity analysis. Additionally, CDM Smith oversaw implementation of proper soil erosion and sediment controls. Details of the field activities are provided below.

Field Activities

Stockpiles A, B, and C have remained relatively unchanged from the last site visit in May 2020. The three stockpiles were mostly covered with tarps upon arrival at the site on November 2, 2020. Field observations indicate that stockpiles A and B primarily contain dry soils intermixed with various types of fill, construction, debris, and organic matter. Based on field observations, stockpile C is assumed to contain excavated material, similar to that found in A and B. **Table 1** presents a description of stockpile contents and the sampling rationale for each pile.

Soil sampling of stockpiles A, B, and C was conducted on November 2, 2020. Photographs of field activities are provided in **Attachment 1**. Sampling procedures followed sampling protocol based on New Jersey's Fill Material Guidance for SRP Sites (2015). Representative soil samples were collected from different locations and depth horizons within each stockpile, based on the following criteria: one sample collected every 20 cubic yards (CY) for the first 100 CY of material, and one sample collected every 100 CY for the next 1,000 CY of material. A total of 26 soil samples were collected from all 3 stockpiles: 7 samples from stockpile A, 11 samples from stockpile B, and 8 samples from stockpile C. One duplicate sample was collected from stockpile A for quality control. All samples were analyzed for PCBs, toxicity via TCLP, reactivity, ignitability, and corrosivity by Katahdin Analytical Services in Scarborough, Maine.

To minimize migration of contaminated stockpile material, soil erosion and sediment controls were implemented for the stockpiles in accordance with New Jersey's Standards for Soil Erosion and Sediment Control in New Jersey (2017). CDM Smith reviewed the specifications of the silt fence and tarp material brought onsite prior to installation. Stockpiles were covered and properly anchored with 6-millimeter-thick heavy grade sheets of polyethylene on November 3, 2020. A silt fence was installed around the toe of each stockpile slope to contain movement of the stockpiled material on November 4, 2020. Silt fence and tarp installation was completed by Innovative Recycling Technologies (IRT) on November 3 and 4, 2020 with oversight provided by CDM Smith personnel. After cover and silt fence installation, CDM Smith personnel inspected the cover to be sure properly anchored and the silt fence to ensure the bottom portion of the fence was securely placed 6 inches below ground surface.

Results and Analysis

The detected results for stockpile A, B, and C are presented in **Table 2a**, **Table 2b**, and **Table 2c**, respectively. TCLP results are compared to the Maximum Concentration of Contaminants for the Toxicity Characteristic (40 CFR 261.24). Corrosivity is evaluated by comparing pH concentrations to guidance values (40 CFR 261.22). Soil PCB concentrations are compared to 50 mg/kg of total PCBs to determine whether the materials are regulated under the Toxic Substances and Control Act (TSCA) (40 CFR 761.20). Notable results are:

- Five soil samples (and one duplicate sample) collected from stockpile A contained PCB concentrations in soil greater than 50 mg/kg.
- Leachate from seven soil samples collected from stockpile B contained lead concentrations greater than the Maximum Concentration of Contaminants for the Toxicity Characteristic.
- Leachate from one soil sample collected from stockpile C contained a lead concentration greater than the Maximum Concentration of Contaminants for the Toxicity Characteristic.

References

New Jersey Department of Agriculture. 2017. The Standards for Soil Erosion and Sediment Control in New Jersey, 7th Edition. January 2014, Revised July 2017.

New Jersey Department of Environmental Protection. 2015. Fill Material Guidance for SRP Sites, Version 3.0. April.

40 CFR 261.22. 2005. Characteristic of corrosivity. June 14. Viewed at:
<https://www.law.cornell.edu/cfr/text/40/261.22>

40 CFR 261.24. 2006. Toxicity Characteristic. July 14. Viewed at:
<https://www.law.cornell.edu/cfr/text/40/261.24>

40 CFR 761.20. 1999. Prohibitions and exceptions. June 24. Viewed at:
<https://www.law.cornell.edu/cfr/text/40/761.20>

Tables

Table 1
Stockpile Contents and Sampling Rationale
Pierson's Creek Superfund Site
Newark, New Jersey

Stock Pile ID	General Dimensions	Approximate Volume (cubic yards)	General Makeup of Debris Pile	Waste Characterization Samples (TCLP full, reactivity, corrosivity, and ignitability)
A	55' long x 35' wide x 3' high	215	Excavated materials. 50% soil/sediment, 25% general fill, 25% phragmites and other debris (based on material at base – pile was mostly covered)	7 samples
B	55' long x 30' wide x 10' high	610	Excavated materials. 50% soil/sediment, 25% general fill, 25% phragmites and other debris	11 samples
C	50' long x 40' wide x 5' high	370	Excavated materials. 50% soil/sediment, 25% general fill, 25% phragmites and other debris (based on material at base – pile was mostly covered)	8 samples

Notes:

1. The sampling scope is based on guidance provided in the New Jersey Fill Material Guidance for SRP Sites, April 2015. Version 3.
2. One sample was collected every 20 cubic yards for the first 100 cubic yards of material, and one sample was collected every 100 cubic yards for the next 1,000 cubic yards of material.

Acronyms:

ID - identification

SRP - Site Remediation Program

TCLP - Toxicity Characteristic Leaching Procedure

Table 2a
Stockpile A Sample Results
Pierson's Creek Superfund Site
Newark, New Jersey

Sample ID				SP-A-1		SP-A-2		SP-A-3		SP-A-4		SP-A-5		SP-A-6		SP-A-7		SP-A-900	
Analyte	CAS Number	Screening Criteria	Unit	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
TCLP Leachate Concentrations																			
1,4-Dichlorobenzene	106-46-7	7.5	mg/L	0.083		0.045	J	0.062		0.054			U		U	0.04	J	0.059	
Arsenic	7440-38-2	5	mg/L	1.57		0.33	N	0.766		0.624			U		U	0.874		1.39	
Barium	7440-39-3	100	mg/L	3.28		2.25		2.98		2.97		1.48		1.91		3.78		3.28	
Benzene	71-43-2	0.5	mg/L	0.12		0.044	J	0.11		0.059	J		U		U	0.11		0.13	
Cadmium	7440-43-9	1	mg/L	0.0454		0.24		0.0123	J	0.0686		0.129		0.136		0.181		0.00752	J
Chlorobenzene	108-90-7	100	mg/L	0.35		0.11		0.19		0.12			U		U	0.14		0.17	
Chromium	7440-47-3	5	mg/L	0.05	J	0.0079	J	0.015	J	0.01	J	0.0077	J	0.0078	J	0.022	J	0.012	J
Endrin	72-20-8	0.02	mg/L		U		U	0.000053	J	0.000057	J		U		U	0.000087	JJ	0.000059	J
Lead	7439-92-1	5	mg/L	1.47		1.12	N	0.581		0.674		4.94		2.67		1.95		0.413	
Mercury	7439-97-6	0.2	mg/L	0.000612		0.00555	EA	0.000499		0.00121		0.000761		0.00189		0.0014		0.000937	
Methoxychlor	72-43-5	10	mg/L		U		U		U		U		U		U	0.094	JJ		U
Other Waste Characteristics Results																			
Sulfide Reactive	SREAC	*	mg/kg	45	J	21	J	45	J	32	J	32	J		U		U	33	J
Total Cyanide	57-12-5	*	mg/kg	2.5		2		2.2			U	0.9	J		U	3		2.2	
pH	pH	<2 or >12.5	pH units	7.7		8		7.9		7.6		8		8.1		7.7		7.7	
Soil PCB Concentrations																			
Aroclor-1242	53469-21-9	N/A	mg/kg	12	J	12		15		13		0.33		0.44		11		14	
Aroclor-1254	11097-69-1	N/A	mg/kg	35	J	27	J	35	J	39	J	1.7		2.4	J	28	J	35	J
Acroclor-1260	11096-82-5	N/A	mg/kg	14		12		13		15		0.76		0.96		12		15	
Total PCBs		50	mg/kg	61		51		63		67		2.79		3.8		51		64	
Other Results																			
Total Solids	TSOLIDS	N/A	%	55		66		71		63		77		56		72		63	

Notes:

1. All samples were collected on 11/2/2020.
 2. Only analytes that were detected in at least one sample are included in this table.
 3. The screening criteria for the TCLP leachate concentrations are the maximum concentration of contaminants for the toxicity characteristics listed in Table 1 of 40 CFR § 261.24. The screening criteria for total PCBs is based on the Toxic Substances Control Act (TSCA).
 4. Total PCBs are calculated as the sum of all Aroclor results
 5. Results that are highlighted have concentrations greater than the screening criteria.
- * EPA currently does not have guidance threshold levels for determining whether a waste is cyanide-bearing or sulfide-bearing.

Acronyms:

CAS - Chemical Abstract Services
EA - estimated value, result exceeded the upper level of calibration
ID - identification
J - estimated value
mg/kg - milligram per kilogram
mg/L - milligram per liter
N - presumptive evidence of a compound based on mass spectral library search

PCB - polychlorinated biphenyl
ppm - parts per million
Q - qualifier
TCLP - Toxicity Characteristic Leaching Procedure
U - compound was analyzed for but not detected
N/A - not applicable

Table 2b
Stockpile B Sample Results
Pierson's Creek Superfund Site
Newark, New Jersey

Sample ID				SP-B-1		SP-B-2		SP-B-3		SP-B-4		SP-B-5		SP-B-6		SP-B-7		SP-B-8		SP-B-9		SP-B-10		SP-B-11	
Analyte	CAS Number	Screening Criteria	Unit	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
TCLP Leachate Concentrations																									
Barium	7440-39-3	100	mg/L	1.64		1.74		1.33		0.874		0.687		1.38		0.874		0.92		1.54		2.28		1.54	
Cadmium	7440-43-9	1	mg/L	0.217		0.183		0.245		0.189		0.346		0.169		0.234		0.233		0.167		0.145		0.241	
Chromium	7440-47-3	5	mg/L	0.036	J	0.139		0.02	J	0.0083	J	0.011	J	0.0058	J	0.012	J	0.0068	J	0.0068	J		U	0.022	J
Lead	7439-92-1	5	mg/L	6.88		13.6		17.4		2.64		5.08		17.7	N	2.43		2.5		9.73		0.788		5.42	
Mercury	7439-97-6	0.2	mg/L	0.0011		0.0013		0.00135		0.00203		0.00493		0.00172	NEA	0.00314		0.00274		0.00164		0.000772		0.00105	
Tetrachloroethene	127-18-4	0.7	mg/L		U		U		U	0.16		0.02	J		U		U		U		U		U		U
Other Waste Characteristics Results																									
Sulfide Reactive	SREAC	*	mg/kg		U	28	J		U		U	32	J	29	J	29	J	42	J	19	J	54		34	J
Total Cyanide	57-12-5	*	mg/kg		U	0.78	J		U	2.2		0.95	J		U	2.1	J	1.6	J	0.96	J	1.1			U
pH	pH	<2 or >12.5	pH units	7.7		8		7.6		7.8		6.9		7.9		7.5		7.5		7.8		7.7		7.9	
Soil PCB Concentrations																									
Aroclor-1242	53469-21-9	N/A	mg/kg	0.96		0.2		1.3		1.4		2.4		0.51	J	1.1		1.6		0.4		0.95		1.1	
Aroclor-1254	11097-69-1	N/A	mg/kg	2		1.5		2.7		5	J	4.1		0.99		2.8		3.2		2.4		3.5	J	32	
Aroclor-1260	11096-82-5	N/A	mg/kg	0.89		0.73		1.4		2		2.2		0.4	MM	1.3		1.3	J	1		1.2		3.8	
Total PCBs		50		3.85		2.43		5.4		8.4		8.7		1.9		5.2		6.1		3.8		5.65		36.9	
Other Results																									
Total Solids	TSOLIDS	N/A	%	65		85		69		82		60		74		58		76		79		75		77	

Notes:

1. All samples were collected on 11/2/2020.

2. Only analytes that were detected in at least one sample are included in this table.

3. The screening criteria for the TCLP leachate concentrations are the maximum concentration of contaminants for the toxicity characteristics listed in Table 1 of 40 CFR § 261.24.

The screening criteria for total PCBs is based on the Toxic Substances Control Act (TSCA).

4. Total PCBs are calculated as the sum of all Aroclor results

5. Results that are highlighted have concentrations greater than the screening criteria.

* EPA currently does not have guidance threshold levels for determining whether a waste is cyanide-bearing or sulfide-bearing.

Acronyms:

CAS - Chemical Abstract Services

EA - estimated value, result exceeded the upper level of calibration

ID - identification

J - estimated value

M - indicates that the flagged compound did not meet criteria in the matrix spike/matrix spike duplicate

mg/kg - milligram per kilogram

mg/L - milligram per liter

N - presumptive evidence of a compound based on mass spectral library search

PCB - polychlorinated biphenyl

ppm - parts per million

Q - qualifier

TCLP - Toxicity Characteristic Leaching Procedure

U - compound was analyzed for but not detected

N/A - not applicable

Table 2c
Stockpile C Sample Results
Pierson's Creek Superfund Site
Newark, New Jersey

Sample ID				SP-C-1		SP-C-2		SP-C-3		SP-C-4		SP-C-5		SP-C-6		SP-C-7		SP-C-8	
Analyte	CAS Number	Screening Criteria	Unit	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
TCLP Leachate Concentrations																			
Arsenic	7440-38-2	5	mg/L	0.1	J	0.19			U	0.53		0.951		0.26		3.07		0.561	
Barium	7440-39-3	100	mg/L	0.166		0.456		0.111		0.358		0.148		0.166		0.965		0.694	
Cadmium	7440-43-9	1	mg/L	0.266		0.139		0.186		0.203		0.165		0.203		0.121		0.148	
Chromium	7440-47-3	5	mg/L	0.015	J	0.0089	J	0.0619	J	0.012	J	0.044	J	0.02	J	0.0084	J	0.006	J
Lead	7439-92-1	5	mg/L	1.53		0.779		15.6		0.946		5.41		4.72		0.853		0.825	
Mercury	7439-97-6	0.2	mg/L	0.0126		0.00141		0.00413		0.00015	JA	0.00145		0.00156		0.00537		0.00469	
Selenium	7782-49-2	1	mg/L		U		U		U	0.022	J		U		U		U		U
Other Waste Characteristics Results																			
Sulfide Reactive	SREAC	*	mg/kg	32	J		U		U	33	J		U		U		U	40	J
Total Cyanide	57-12-5	*	mg/kg		U	0.71	J	4.9		1.8		5.1		3.4		1	J		U
pH	pH	<2 or >12.5	pH units	5.8		7.4		3.7		5.5		4		4.6		7.4		7.2	
Soil PCB Concentrations																			
Aroclor-1242	53469-21-9	N/A	mg/kg	6.2		2.6		21		2		13		6.2		1.5		2.2	
Aroclor-1254	11097-69-1	N/A	mg/kg	9.7	J	6.2		14		1.7		6.5		5		3.7		3.4	
Aroclor-1260	11096-82-5	N/A	mg/kg	3.4		3		5.5		0.67		2.5		2		1.4		1.3	
Total PCBs		50		19.3		11.8		40.5		4.37		22		13.2		6.6		6.9	
Other Information																			
Total Solids	TSOLIDS		%	58		61		50		71		58		67		77		61	

Notes:

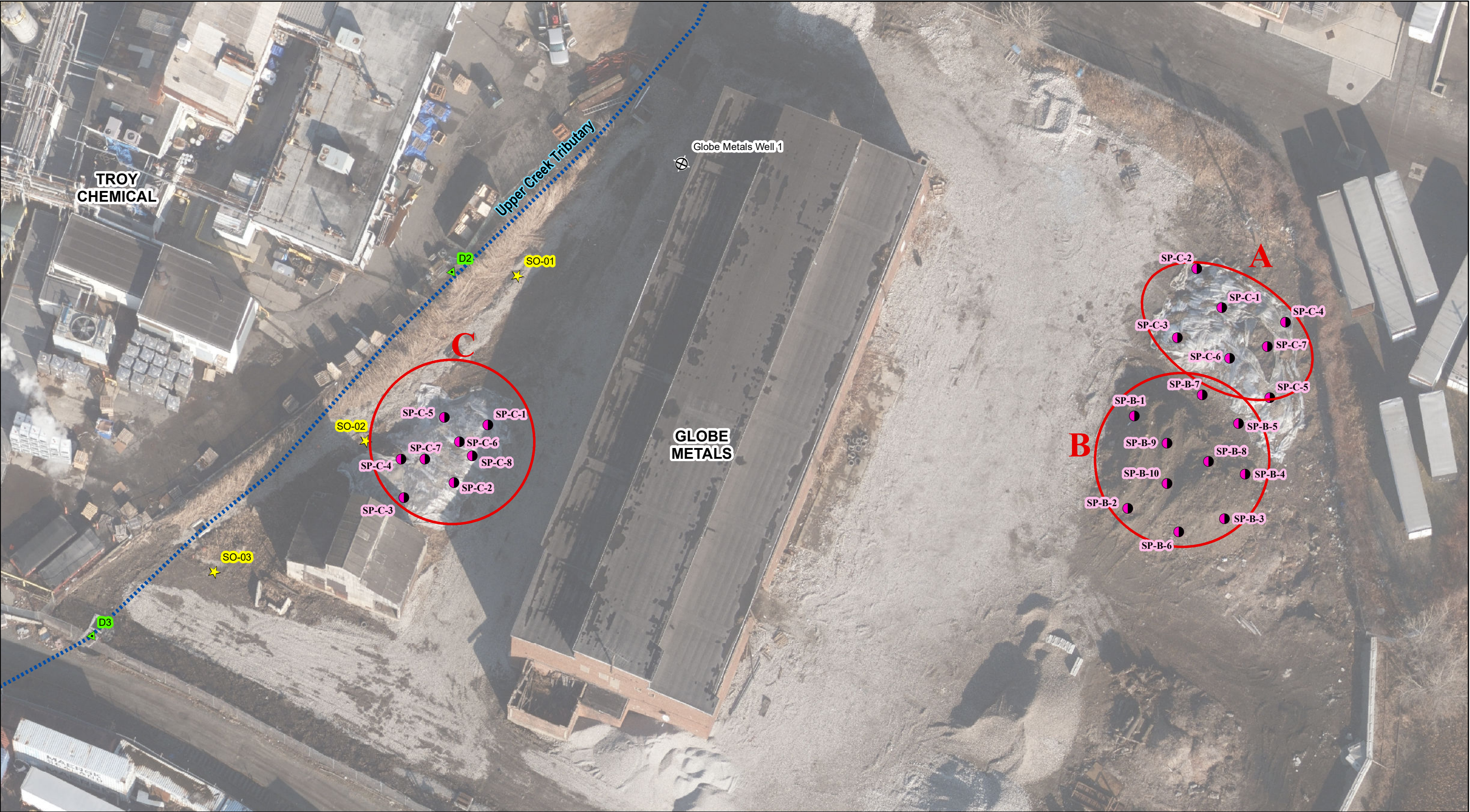
1. All samples were collected on 11/2/2020.
 2. Only analytes that were detected in at least one sample are included in this table.
 3. The screening criteria for the TCLP leachate concentrations are the maximum concentration of contaminants for the toxicity characteristics listed in Table 1 of 40 CFR § 261.24.
The screening criteria for total PCBs is based on the Toxic Substances Control Act (TSCA).
 4. Total PCBs are calculated as the sum of all Aroclor results
 5. Results that are highlighted have concentrations greater than the screening criteria.
- * EPA currently does not have guidance threshold levels for determining whether a waste is cyanide-bearing or sulfide-bearing.

Acronyms:

A - indicated that a tentatively identified compound is a suspected aldol-condensation product
CAS - Chemical Abstract Services
EA - estimated value, result exceeded the upper level of calibration
ID - identification
J - estimated value
mg/kg - milligram per kilogram
mg/L - milligram per liter

N - presumptive evidence of a compound based on mass spectral library search
PCB - polychlorinated biphenyl
ppm - parts per million
Q - qualifier
TCLP - Toxicity Characteristic Leaching Procedure
U - compound was analyzed for but not detected
N/A - not applicable

Figures



- Culverted Portion of Upper Creek Tributary
- ^A Soil/Sediment/Debris Stockpile or Debris Pile
- Stockpile Material TCLP Sampling Location

- Remedial Investigation Sample Locations:**
- ▲ Sediment Core
 - ★ Soil Boring
 - ⊗ Historic Monitoring Wells

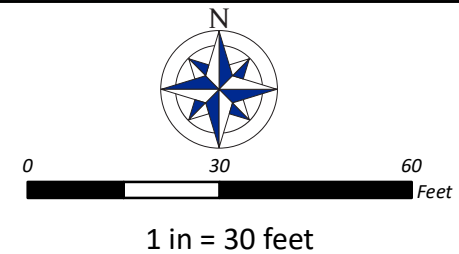


Figure 1
Globe Metals Stockpile Sampling Locations
Pierson's Creek Superfund Site
Newark, NJ

CDM Smith

Attachment 1

Photographs of Field Activities

Globe Metals Property – Pierson's Creek Superfund Site, OU1



Photo #1: Looking northeast at Pile A (being covered to the left) and Pile B (larger on the right).



Photo #2: Looking east at Pile A (covered).

Globe Metals Property – Pierson's Creek Superfund Site, OU1



Photo #3: Looking east at southern side of Pile B (covered).



Photo #4: Looking NE at northern side of Pile A with silt fence installed.

Globe Metals Property – Pierson's Creek Superfund Site, OU1



Photo #5: Looking SE at western side of Pile B with silt fence installed.



Photo #6: Looking east along southern end of Pile B with silt fence installed.

Globe Metals Property – Pierson's Creek Superfund Site, OU1



Photo #7: Looking south at Pile C (uncovered).



Photo #8: Looking south at Pile C (covered) with silt fence installed.